



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO THE INSERVICE TESTING PROGRAM REQUESTS FOR RELIEF
ARIZONA PUBLIC SERVICE COMPANY, ET AL.
PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3
DOCKET NOS. 50-528, 50-529, AND 50-530

1.0 INTRODUCTION

Section 50.55a of Title 10 of the Code of Federal Regulations, 10 CFR 50.55a, requires that **inservice** testing (IST) of certain **ASME** Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the **ASME** Boiler and Pressure Vessel Code and applicable Addenda, except where alternatives are authorized or **relief** is granted by the **Commission** pursuant to **19(a)(3)(i), (a)(3) (ii), or (f)(6)(i)** of Section 50.55a. In order to obtain authorization or relief, the licensee must demonstrate that (1) the proposed alternatives provide an acceptable level of quality and safety, (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety, or (3) conformance is impractical for its facility.

Section 50.55a authorizes the **Commission** to approve alternatives or grant relief from the **ASME** Code requirements upon making the necessary findings. The NRC staff's findings with respect to the relief that has been requested and alternatives proposed as part of the licensee's IST program are contained in this Safety Evaluation.

Section 50.55a(f)(6)(I) requires the **Commission** to evaluate determinations of impracticality and authorizes the **Commission** to grant relief and impose such alternative **requirements** as **it** determines is authorized by law and will not endanger **life** or property or the **common** defense and security and is otherwise **in** the public interest, **giving** due consideration to the burden upon the licensee that could result if the requirements were imposed on the **facility**.

By letter dated September, 1992, Arizona **Public** Service Company (the licensee) requested approval of a revised relief request for the four safety injection tank discharge check valves **V215, V225, V235, and V245**; and the four safety injection **line** discharge check valves **V217, V227, V237, and V247**.

2.0 DISCUSSION AND EVALUATION

The check valves **which** are the subject of this relief request provide

protection for the safety injection tanks and the high and low pressure safety injection lines from the higher pressure reactor coolant system during normal operation. In the event of a loss-of-coolant accident, the valves open to allow water to be delivered to the reactor vessel from the safety injection tanks and the safety injection system to cool the core.

The test requirement for these valves under Section XI of the ASME Code that is relevant to the relief requests is to full-stroke exercise the valves every 3 months, or part-stroke exercise every 3 months and perform a full-stroke test during cold shutdown, or perform a full-stroke test during cold shutdown if the valves cannot be part-stroked every three months.

The licensee was granted relief from these requirements in an NRC letter dated November 15, 1988. The testing method approved in that letter is to part-stroke exercise the safety injection tank check valves in Mode 3 (hot standby) after each refueling outage when the safety injection tank pressure is above 600 psig and to disassemble one valve of each type each refueling outage to verify freedom of disc movement. If it is found that the disassembled valve's full-stroke capability is questionable, then all 3 other valves of that type would have to be disassembled and inspected.

In its letter of September 8, 1992, APS proposes an alternate testing method which would consist of a full-stroke exercise of all 8 valves during each refueling outage. This would be accomplished by opening the safety injection tank isolation valve with pressure in the safety injection tank and with the reactor vessel head removed. This evolution would open a pair of the check valves, one of each type. This would be repeated for the other 3 pairs until all 8 are tested. The licensee would monitor the level and pressure drop in the safety injection tank to determine whether or not full opening of the valves was achieved.

The licensee has conducted two tests using the proposed revised method. Acoustic data from both tests provided additional assurance that each valve actually stroked to the full open position during the test.

The NRC staff has reviewed the proposed alternate test method and finds it acceptable, subject to two conditions discussed below. The proposed test method requires each valve to be tested in the manner in which it performs its safety function, and is therefore a more realistic and improved test. It involves full stroking, as opposed to the current partial stroking. It also does not rely on valve disassembly, which activity offers the opportunity for reassembly errors. An added benefit of the revised method is the reduced personnel radiation exposure since the valves no longer have to be disassembled.

The NRC staff therefore finds the revised test method to be acceptable, provided that (1) the valves are partial-stroke tested each cold shutdown if they have not been tested within the past 3 months, and (2) one valve of each type is confirmed to have opened fully by a non-intrusive method (e.g., acoustics) each refueling outage on a rotating schedule such that all valves are confirmed in this manner in a series of four refueling.

The NRC staff concurs with the licensee's continued determination that compliance with the code requirements is impractical in this case. Full-stroke exercising of these valves is not practical in any plant mode other than refueling shutdown when the reactor vessel head is removed. Part-stroke testing every 3 months is not practical since a plant shutdown would be required to perform the test. It is, however, practical to conduct a part-stroke test at each cold shutdown. During cold shutdown, the safety injection check valves can be part-stroked by the normal flow delivered to the reactor coolant system via the shutdown cooling system. The safety injection tank discharge check valves can be tested in the same manner as they are currently being tested by part-stroke exercising in Mode 3 (hot standby) when the safety injection tank pressure is above 600 psig. The licensee has already confirmed in two separate tests that full opening of the valves can be established by acoustics.

As noted in the relief request, these valves also perform a safety function by closing to prevent over pressurization of S1 piping from RCS pressure. Similar to the required valve open exercising requirements, these valves must be verified to be closed every three months or during cold shutdown if the closure verification of these valves cannot be performed every three months. Since these valves will be part-stroke exercised at cold shutdowns and since the Technical Specifications require leak testing of these valves after they are disturbed, the closure verification will be performed at cold shutdown through the leak testing. The licensee should either perform the closure verification every three months or prepare a cold shutdown justification if this testing is not practical and revise the IST program to reflect this testing, as appropriate.

3.0 CONCLUSION

The revised valve Relief Requests Nos. 33 and 34 transmitted by APS letter dated September 8, 1992 are acceptable for implementation, provided that the check valves are part-stroked each cold shutdown, and provided further that one valve of each type is confirmed to have opened fully by a non-intrusive method (e.g., acoustics) each refueling outage on a rotating schedule such that all valves are confirmed in this manner in a series of four refueling.

The NRC staff has determined that granting of this relief pursuant to 10 CFR 50.55a(f)(6)(i) is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest. In making this determination, the NRC staff has considered the alternate testing being implemented and the impracticality of performing the required testing considering the burden if the requirements were imposed.

Date: October 23, 1992